YOUR MONEY MATTERS

Technical Background
Security Features

The Department of the Treasury's Bureau of Engraving and Printing (BEP) is responsible for producing the new series currency. The Federal Reserve System will introduce the new currency beginning with the Series 1996 $100 notes. The new features—including enlarged off-center portrait, watermark, concentric fine-line patterns and color-shifting ink—were selected after extensive testing and evaluation of approximately 120 bank note security devices, many of which are used successfully by other countries with lower production and circulation demands.

Other pre-existing security features such as the security thread and microprinting are included in the new notes and have changed only slightly.

Evaluation Criteria

Effectiveness

Counterfeit deterrent effectiveness was tested by reprographic equipment manufacturers and government scientists. They also considered the ease of public and cash handler recognition.

Durability

Durability was tested rigorously. Tests included crumpling, folding, laundering, soiling and soaking in a variety of solvents such as gasoline, acids and laundry products.

Developmental

The total cost was $765,000: $265,376 to fund National Academy of Sciences studies, and approximately $500,000 to purchase test quantities of features and carry out internal BEP evaluations.

Production Costs

Research and production expenses will increase the cost of each note by a fraction of a cent. The Federal Reserve is funding the development and introduction of the new currency through earnings that the Federal Reserve receives primarily from interest on its holdings of U.S. government securities.

Appearance

The currency still looks very American. The size of the notes, basic colors, historical figures and national symbols are not changing. New features were evaluated for their compatibility with the traditional design of United States currency.

Watermark

A watermark may be formed by varying paper density in a small area during the papermaking process. The image is visible as darker and lighter areas when held up to the light. The watermark does not copy on color copiers thereby making it an easy way to verify the note and making it harder to use lower denomination paper to print counterfeit higher denominations. It depicts the same historical figure as the engraved portrait.

Color-Shifting Inks

These inks change color when the note is viewed from different angles. The ink appears green when viewed directly and changes to black when the note is tilted.

Concentric Fine-Line Patterns

This type of line structure appears normal to the human eye but is difficult for current scanning equipment to resolve properly.

Enlarged Off-Center Portrait

A larger portrait can incorporate more detail, making it easier to recognize and more difficult to counterfeit. It also provides an easy way for the public to distinguish the new design from the old. The portrait is shifted off center to provide room for a watermark and unique "lanes" for the security thread in each denomination. The slight relocation also reduces wear on most of the portrait by removing it from the center, which is frequently folded. The increased size is a help to people with visual impairments.

Pre-Existing Security Features

Security Thread

A security thread is a thin thread or ribbon running through a bank note substrate. It is a versatile feature, with many types currently available, including microprinted, metallic, magnetic, windowed and embedded. The thread in the new notes glows red when held under an ultraviolet light. This characteristic makes it difficult to copy with a color copier that uses reflected light to generate an image. Using a unique thread position for each denomination starting with the new $100 note guards against certain counterfeit techniques, such as bleaching ink off a lower denomination and using the paper to "reprint" the bill as a higher value note. The unique position also can be used by currency-accepting equipment to determine the value of the note, especially if the threads are machine-detectable.

Microprinting

This print appears as a thin line to the naked eye, but the lettering easily can be read using a low-power magnifier. The resolution of most current copiers is not sufficient to copy such fine print. On the newly designed $100 bills, microprinting appears in the lower left corner and on Benjamin Franklin's lapel.